

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	J.D. Tobiason et al.	Attorney Docket No.:	MEIP122171
Application No.:	10/815,893	Art Unit:	2877 / Confirmation No: 9092
Filed:	March 31, 2004	Examiner:	T.T. Ton
Title:	SCALE FOR USE WITH A TRANSLATION AND ORIENTATION SENSING SYSTEM		

RESPONSE

Seattle, Washington 98101

September 4, 2007

TO THE COMMISSIONER FOR PATENTS:

Responsive to the Office Action mailed March 2, 2007, applicants provide the following comments.

In the Office Action, the Examiner rejected Claims 1-2, 6-10, and 13-17 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claims 1-6 and 14 of U.S. Patent No. 7,075,097, issued to Tobiason et al. (hereinafter "the '097 patent").

Applicants respectfully submit that the present invention is patentably distinct from Claims 1-6 and 14 of the '097 patent, in that a position measuring device of the present invention is characterized by the inclusion of a structured light generating target member "comprising at least three respective target sources that output at least three respective structured light patterns, the output structured light patterns being in a fixed relationship relative to the target member." (Claims 1 and 13 of the present application). The position measuring device disclosed in the '097 patent, on the other hand, does not include any "target sources that output . . . structured light patterns" as recited in Claims 1 and 13.

Structured light is generally understood in the art to be a projected pattern of light having a known structure in a known relationship to the structured light source. The Examiner asserts

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that "structured light patterns in the application are target features in the reference, they both do the same function." (Office Action, page 3, lines 4-5.) Applicants respectfully disagree. The "target features" in the reference (the '097 patent) are shown, for example, as the point 115 in Fig. 1, and are described in the '097 patent as follows:

However, it should not be understood that in the general case the point 115 and the input ends of the optical fibers 121' and 121" establish the operable polar angle  $\alpha$ . Rather, it should be appreciated that in the general case, combinations of points and optical fiber input ends that are positioned so that they do not conform to a dictated operable polar angle  $\alpha$  are non-operable. That is, optical paths corresponding to angles of incidence other than  $\alpha$  are blocked by the angular filtering arrangement that dictates the operable polar angle  $\alpha$  in various exemplary embodiments according to this invention.

(Col. 7, lines 20-30.)

One skilled in the art will understand the teachings of the '097 patent are as such that the target points 115, 215, 315, 415, etc., reflect an unstructured or unpatterned light throughout a solid angle that is generally uncontrolled. Certain rays of that unstructured solid angle of light are then "selected" for imaging on the detector, based on the characteristics of the angular filtering arrangement, which determines the operable angle  $\alpha$  as recited in the excerpt above. Thus, in the absence of an optical path array and an angular filtering element (e.g., the elements 220 and 250 shown in Fig. 2 of the '097 patent) there is no pattern or structure in the sense that is commonly understood as "structured light" in either the light arising from the target member 210 or in any target point images on the detector 230. Such a device (without an optical path array and an angular filtering) would therefore be inoperable. In short, according to the teachings of the '097 patent, the target member and/or its target features (target points) do not output structured light. Rather, in the '097 patent, the pattern of an image feature corresponding to each target feature depends on the operation of an optical path array and an angular filtering element (e.g., the elements 220 and 250 shown in Fig. 2). In other words, in the '097 patent, it is the configuration of an optical path array and an angular filtering element that determines the

pattern of an image feature. To the contrary, in the present application, it is the "target sources that output at least three respective structured light patterns," as explicitly recited in Claims 1 and 13.

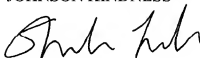
Therefore, the '097 patent does not disclose or suggest the "structured light generating target member comprising at least three respective target sources that output at least three respective structured light patterns, the output structured light patterns being in a fixed relationship relative to the target member," as explicitly recited in Claims 1 and 13 of the present application. Accordingly, applicants respectfully submit that the nonstatutory obviousness-type double patenting rejection of the present application in view of the '097 patent is improper and should be withdrawn.

However, in order to expedite examination of the present application, applicants hereby submit a duly executed Terminal Disclaimer in compliance with 37 CFR 1.321(c) to overcome the nonstatutory obviousness-type double patenting rejection.

#### CONCLUSION

Based on the foregoing, applicants respectfully request the allowance of the present application, including Claims 1-17. If the Examiner should have further issues to resolve, he is invited to telephone applicants' undersigned attorney at the number set forth below.

Respectfully submitted,  
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